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Revision of the genus *Aphelinus* Dalman (Hymenoptera: Chalcidoidea: Aphelinidae) in Norway with descriptions of 3 new species

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Abstract: The Norwegian species of *Aphelinus* Dalman, 1820 (Hymenoptera: Aphelinidae) are reviewed, and a total of 8 species are recorded. The 3 species *Aphelinus abdominalis* (Dalman, 1820), *A. chaonia* Walker, 1839, and *A. varipes* (Förster, 1841) have previously been recorded from Norway, while *A. mali* (Haldemann, 1851) and *A. asychis* Walker, 1839 represent new records for the country. The 3 species *A. elvestueni* sp. nov., *A. odin* sp. nov., and *A. paluscolus* sp. nov. are described, illustrated, and compared with closely related species. An illustrated key for the identification of the females of Norwegian *Aphelinus* is presented.

Key words: Aphelinidae, revision, *Aphelinus*, new species, new record, Norway

1. Introduction

The parasitic wasps in the superfamily Chalcidoidea are one of the most important groups for biological control of plant-feeding insects (Yasnosh, 1995; Noyes, 2013). Among them, the species of the family Aphelinidae attack species of the orders Hemiptera, Orthoptera, Hymenoptera, Diptera, and Lepidoptera; most species are associated with Hemiptera in the superfamilies Coccoidea, Aleyrodoidea, and Aphidoidea (Yasnosh, 1995). The species of the genus *Aphelinus* are parasitoids of sap-sucking aphids in Aphidoidea (Hemiptera). Aphids are of quite considerable economic importance, as they damage many horticultural, forest, and fruit plants, and are the cause of leaf distortion and flagging terminals. Infested plants have reduced growth and vigor. With severe infestations, leaf yellowing and twig dieback may occur. Species of *Aphelinus* have been used in biocontrol against many aphid pests, most successfully *Aphelinus mali* for the biological control of *Eriosoma lanigerum* (Hausmann), the apple woolly aphid (Nikolskaya and Yasnosh, 1966; Yasnosh, 2002). The latest works on *Aphelinus* from Europe were done by Japoshvili and Abrantes (2006) and Japoshvili and Karaca (2009). The aim of this study was to review genus *Aphelinus* species housed in the Natural History Museum of Oslo University in order to record the fauna of *Aphelinus* species of Norway.

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2. Materials and methods

The *Aphelinus* collection housed in the Natural History Museum of Oslo University was studied. The material was collected during 1953–2008 using all major methodologies for Aphelinidae including direct rearing from the host, sweeping, yellow-pan traps, and Malaise traps. Terminology follows that of Nikolskaya and Yasnosh (1966), Graham (1976), and Yasnosh (1963–2002). The following abbreviations are used in the text: AOL, anterior ocellar line (the shortest distance between the anterior and posterior ocelli); DAO, diameter of anterior ocellus; DPO, diameter of posterior ocelli; EL, maximum eye length; F1, F2, etc., first funicle segment, second funicle segment, etc.; FV, maximum frontovertex width; GL, maximum gonostylus (third valvula) length; GW, gonostylus width; MS, malar space (the shortest distance from the eye to the mouth margin); MSL, malar space (distance from eye margin to clypeus); MT, mid-tibia length; OOL, ocular–ocellar line (the shortest distance between posterior ocellus and adjacent eye margin); POL, posterior ocellar line (the shortest distance between the posterior ocelli). Specimens were card-mounted and slides were done according to Noyes's (2013) methodology. The collection of *Aphelinus* spp. is located in the Natural History Museum of Oslo University Norway as all type material of new species. For identification, we used a binocular stereomicroscope "MICROS" model: MS1107/MZ1280/MC1280. Drawings were done by the first author by hand.

Geographical positions are given with latitude and longitude measures (decimal grades) and the World Geodetic System 84 (WGS84), while the division of the Norwegian counties follows Økland (1981).

3. Results

The Norwegian species of *Aphelinus* Dalman

The genus *Aphelinus* Dalman, 1820 comprises 91 described species worldwide; 33 of these are known from Europe (Hopper et al., 2012; Noyes, 2013). Only 3 species have hitherto been recorded from Norway, i.e., *Aphelinus abdominalis* (Dalman, 1820), *A. chaonia* Walker, 1839, and *A. varipes* (Förster, 1841) (Compton, 1981), while 2 species, *A. asychis* Walker, 1839 and *A. mali* (Haldeman, 1851), are reported for the first time from Norway; 3 species are described here as new to science. Diagnosis, hosts, and taxonomic status of all these species can be found in Nikolskaja and Yasnosh (1966) and Noyes (2013).

***Aphelinus abdominalis* (Dalman, 1820)**

Material examined [NORWAY]: AKERSHUS [AK], Asker: Nesøya, Storenga [E] [N59.8700°, E10.5408° ±25 m], 1♀ 20 May–31 July 2003, Malaise trap, leg. Lars Ove Hansen; Asker: Konglungen, Spirabukta [N59.83404°, E10.49598° ±50 m], 1♀ 28 June 2008, leg. Ove Sørlibråten; BUSKERUD east [BØ], Hurum: Mølen [N59.48920°, E10.49954° ±10 m], 2♀♀ 10 July–15 Aug 2010, Malaise trap/sandy shore, leg. Lars Ove Hansen; TELEMARK coastal [TEY], Drangedal: Skultrevassåsen [N59.0783°, E09.2608° ±1000 m], 1♀ 28 May–18 July 2006, Malaise trap, leg. Sverre Kobro; AUST AGDER coastal, Arendal: Arendal [Barbu; N58.46591°, E8.77537° ±500 m], 1♀ 25 July 1953, leg. Alf Bakke.

Distribution: Argentina, Australia, Austria, Azerbaijan, Belgium, Brazil, Canary Islands, Chile, Croatia, Czech Republic, Denmark, Egypt, France, Georgia, Germany, Hungary, India, Iraq, Italy, Japan, Kazakhstan, Netherlands, Pakistan, People's Republic of China, Poland, Portugal, Russia, Serbia, Slovakia, South Africa, Spain, Sweden, Switzerland, United Kingdom, and Zimbabwe. **Norway**: SOGN OG FJORDANE coastal [SFY], Luster: Jostedalen, Myklemyr - Vigdalen (hairpin slopes), 1♀ 11 August 1979, leg. Steve Compton (Compton, 1981).

***Aphelinus asychis* Walker, 1839**

Material examined [NORWAY]: ØSTFOLD [Ø], Halden: Yestehede [N59.06666°, E11.41490°; 30 m a.s.l.] 1♀ 16–17 July 2009, yellow pan-trap, leg. Lars Ove Hansen; AKERSHUS [AK], Oslo: Bygdøy, Paradisbukta SW [N59.89972°, E10.66904°], 1♀ 27 June–25 July 2006, Malaise trap/meadow, leg. Anders Endrestøl & Stefan Olberg; Ullensaker: Sessvollmoen W [N60.24450°, E11.12792° ±10 m; 208 m a.s.l.] 1♀ 26 June–25 August 2007, Malaise trap A/sandy pine forest, leg. Lars Ove Hansen; Nesodden: Gjøfjell [N59.75253°, E10.60390° ±100 m], 1♀ 7–21 May 1997, Malaise trap, leg. Sverre Kobro; HEDMARK southern [HES], Elverum: Starmoen NR [N60.85040°, E11.68933° ±50 m], 1♀ 29 July–14 Sept. 2004, pitfall trap C/sandy pine forest, leg. Lars Ove Hansen & Eirik Rindal; VESTFOLD [VE], Tjøme: Sandø N [N59.08389°, E10.46206° ±10 m; 4 m a.s.l.], 1♀ 20 July–30 August 2007, Malaise trap/sandy seashore, leg. Lars Ove Hansen; AUST AGDER coastal [AAY], Arendal: Tromøy [Bjelland; N58.4572°, E08.8844° ±100 m], 2♀♀ 18 July 1953, leg. Alf Bakke.

Distribution: Angola, Argentina, Australia, Azerbaijan, Brazil, Canary Islands, Chile, Colombia, Croatia, Czech Republic, Egypt, Finland, France, Georgia, Germany, Greece, Hungary, India, Iran, Iraq, Israel, Italy, Japan, Kazakhstan, Mexico, Morocco, Nepal, Netherlands, Pakistan, People's Republic of China, Portugal, Russia, Slovakia, South Africa, Spain, Balearics, Sweden, Turkey, Ukraine, United Kingdom, and United States of America. New record for Norway.

***Aphelinus chaonia* Walker, 1839**

Material examined [NORWAY]: AKERSHUS [AK], Oslo: Maridalen, Kirkeby [NW] [N59.99639°, E10.76006° ±25 m], 1♀ 26 June–31 July 2007, Malaise trap B/by small stream, leg. Anders Endrestøl & Lars Ove Hansen; Ullensaker: Sessvollmoen [W], Aurtjernet, [N60.22954°, E11.11133° ±10 m; 200 m a.s.l.], 1♀ 1 May–30 June 2008, Malaise trap/sandy pine forest/forest edge, leg. Lars Ove Hansen; BUSKERUD eastern [BØ], Nedre-Eiker: Hagatjern, Ryggsetra [N59.73304°, E10.04571° ±25 m], 1♀ 1–31 July 1994, Malaise trap A/hay-meadow, leg. Yngvar Berg & Lars Ove Hansen.

Distribution: Austria, Azerbaijan, Brazil, Canary Islands, Chile, Croatia, Czech Republic, Egypt, France, Georgia, Germany, Hungary, Lithuania, Madeira, Montenegro, Nepal, Netherlands, Pakistan, People's Republic of China, Poland, Portugal, Russia, Serbia, Slovakia, Spain, Sweden, Turkey, Ukraine, United Kingdom, United States of America, **Norway**: SOGN OG FJORDANE coastal [SFY], Luster: Jostedalen, Fossen, 1♀ 24 July 1979, leg. Steve Compon; Luster: Jostedalen, Myklemyr–Vigdalen (hairpin slopes), 4♀♀ 11 August 1979, leg. Steve Compton (Compton, 1981).

***Aphelinus elvestueni* sp. nov.**

Description: Holotype ♀. Length of body 1.66 mm.

Head dark brown; behind anterior ocellus and between posterior ocelli almost yellow, anterior part of FV yellow; scrobes on the face brown, around scrobes between eyes and between scrobes, also between mouth margin and antennal toruli yellow. Scape and basal half of pedicel brown, rest of antenna yellow. Thorax dark brown with metallic reflection. Tegula dark but not as dark as thorax. Ventral part and dorsal part (except first tergite, which is yellow) of gaster brown. Forewings hyaline, but under

marginal vein with slight infuscation. Legs yellow, only mid and hind coxae dark, basal half of hind- and midtibia brown, midfemora and apical half of fore femora brownish, last tarsal segments brown.

Mesoscutum with fine dark setae and a pair of long setae at the apex, scutellum with 2 pairs of long setae.

Head slightly shiny. Ocelli forming an angle of about 100°. Antenna with apex of clava more or less pointed (Figure 1). Eye reaching occipital margin; upper temple rounded in facial view. Eye margins on the face curved. Scrobes moderately deep, U-shaped. Antennal torulus separated from mouth margin by about its own length.

Relative measurements on slides: HW 39, FV 12, POL 8, AOL 4, DPO 2, DAO 2, OOL 1.5, OCL 1.5, EL 22, MSL 14.

Paratype ♀ (length 1.29–1.43 mm). Forewing venation as in Figure 2.

Material examined [NORWAY]: Holotype: AKERSHUS [AK], Ullensaker: Randbydalen [N60.1147°, E11.2011°], 1♀ 26 August 1995, sweep-netted/meadow, leg. Ketil Sand. Paratypes: ØSTFOLD [Ø], Eidsberg: Mysen, Ertevatn [N59.49080, E11.46566 ±500 m], 1♀ 12 June 2011, leg. Ove Sørlibråten; Eidsberg: Mysen, Høytorp fort [N59.56367°, E11.34181° ±500 m], 1♀ 6 August 2012, leg. Ove Sørlibråten; AKERSHUS [AK], Nesodden: Gjøfjell [N59.75253°, E10.60390° ±100 m], 1♀ 28 July–1 Aug. 1997, Malaise trap, leg. Sverre Kobro; Asker: Langåra [N59.8519°, E10.5431° ±2500 m], 1♀ 10 August 1997, Malaise trap, leg. Sverre Kobro; HEDMARK south [HES] Hamar: Hamar [Martodden; N60.7997°, E11.0292° ±250 m], 1♀ 26 June 1959, leg. Alf Bakke; Arendal: Hisøy [N58.4328°, E08.7469° ±2500 m], 1♀ 18 July 1954, 3♀♀ 26 June 1959, leg. Alf Bakke.

Holotype and paratypes deposited at the Natural History Museum, University of Oslo, Norway; designated to the NHM, Oslo, Norway. One paratype deposited at the collection of Agricultural University of Georgia, Tbilisi, Georgia.

Biology: Unknown.

Distribution: Norway.

Etymology: To honor the Norwegian politician Ola Elvestuen.

Comments: The new species is closely related to *A. fusciscapus*, but differs by the following morphological characters: ovipositor 3.6× as long as gonostyli (*fusciscapus*: 3×); clava 3.6× as long as broad (*fusciscapus*: less than 3×); F_3 longer than broad (*fusciscapus*: transverse).

***Aphelinus mali* (Haldeman, 1851)**

Material examined [NORWAY]: ØSTFOLD [Ø], Aremark: Aremark [N59.2394°, E11.6983° ±1000 m], 8♀♀ ex. 28 August 1978 [emerged from rowan berries (*Sorbus aucuparia*) in laboratory 24 April 1979; ref 63/78], leg. Torgeir Edland; AKERSHUS [AK], Oslo: Ekebergskråningen [SE] [N59.88779°, E10.76754° ±25 m], 1♀ 8 July–19 August 2008, Malaise trap/west-facing slope, leg. Anders Endrestøl; Oslo: Bleikøya N [N59.88921°, E10.74241° ±100 m], 1♀ 15 July–29 August 2008, Malaise trap/forest edge, leg. Anders Endrestøl; Oslo: Röa [N59.9467° E10.6436° ±1000 m], 1♀ 22 June 1953, leg. Alf Bakke; Asker: Konglungen, Spirabukta [N59.83404°, E10.49598° ±50 m], 1♀ 28 June 2008, leg. Ove Sørlibråten; Oppegård: Søndre Oppegård, Svartskog [N59.7814° E10.7375° ±1000 m], 4♀♀ 29 August 1954, leg. Alf Bakke; OPPLAND northern [ON], Vestre Slidre: Vaset senter, [N60.9967°, E08.9892° ±500 m], 1♀ September 1999, ex. *Circium heterophyllum*, leg. Ove Sørlibråten; BUSKERUD eastern [BØ], Nedre-Eiker: Hagatjern, Ryggsetra [N59.7333° E10.0458° ±25 m], 1♀ 1–31 July 1994, Malaise trap A/hay-meadow, leg. Yngvar Berg & Lars Ove Hansen; BUSKERUD western [BV], Rollag: Tråen saga [N60.0222°, E09.2806° ±50 m], 1♀ 1–30 June 1994, Malaise trap/sawmill, leg. Bjørn A. Sagvolden; Ål: Hallingdal, Ål [N60.6292°, E08.5592° ±2500 m], 4♀♀ ex. 28 August 1978 [emerged from rowan berries (*Sorbus aucuparia*) in laboratory 24 April–3 May 1979; ref. 121/78], leg. Torgeir Edland; Ål: Hallingdal, Ål [N60.6292°, E08.5592° ±2500 m], 1♀ ex. 15 February 1979, [missing data, but probably emerged from rowan berries (*Sorbus aucuparia*); ref. 121/78], leg. Torgeir Edland; Ål: Hallingdal, Vats [N60.6894°, E08.3611° ±250 m], 2♀♀ ex. 28 August 1978 [emerged from rowan berries (*Sorbus aucuparia*) in laboratory 26 April and 10 August 1979; ref. 121/78], leg. Torgeir Edland, TELEMARK coastal [TEY], Drangedal: Henseide, Djupedal, [N59.08874°, E9.22265° ±500 m], 1♀ 2 July 2011, oak canopy fogging/tree #11, leg. Karl H. Thunes; TELEMARK interior [TEI], Sauherad: Kåsin, Roligheten [N59.4278°, E09.2808° ±250 m], 2♀♀ ex. 11 August 1978 [emerged from rowan berries (*Sorbus aucuparia*) in laboratory 27 July 1979], leg. Torgeir Edland; ROGALAND coastal [RY], Bjerkreim: Vikeså [N58.6397°, E06.0881°], 1♀ ex. 10 August 1978 [emerged from rowan berries (*Sorbus aucuparia*) in laboratory 24 April 1979; ref. 63/78], leg. Torgeir Edland.

Distribution: Argentina, Australia, Austria, Azerbaijan, Belgium, Bolivia, Brazil, Bulgaria, Canada, Canary Islands, Chile, Colombia, Costa Rica, Croatia, Cyprus, Czech Republic, Ecuador, Egypt, France, Georgia, Germany, India, Indonesia, Java (+ Bali), Iraq, Israel, Italy, Japan, Korea, Lebanon, Malta, Mexico, Moldova, Morocco, Netherlands, New Zealand, Pakistan, Paraguay, People's Republic of China, Peru, Philippines, Poland, Portugal, Puerto Rico, Romania, Russia, Saudi Arabia, Senegal, Slovakia, South Africa, Spain, Sweden, Switzerland, Tajikistan, Trinidad and Tobago, Turkey, Ukraine, United Kingdom, United States of America, Uruguay, Uzbekistan, Venezuela, Zambia, and Zimbabwe. New record for Norway.

Comments: *A. mali* is very close to *A. chaonia*, and some overlapping morphological features can be found in series of these species. The taxonomic status of these 2 species should be queried. *A. mali* was first known as a monophagous parasitoid of *Eriosoma lanigera* (Nokolskaja and Yasnosh, 1966); however, it was later found parasitizing many different aphids (Hayat, 1998). *A. chaonia* is discussed as closely related to *A. mali* (Hopper et al., 2012), but for unclear reasons it was not included in the *mali* complex in the same paper. Future DNA studies on long series from different museum materials of these species may solve this taxonomic problem.

***Aphelinus odin* sp. nov.**

Description. Holotype ♀. Length of body 1.2 mm, excluding ovipositor 1.14 mm.

Head completely dark brown; antenna yellow with very slight almost unnoticeable infuscation. Thorax dark brown with metallic reflection. Tegula dark but not as dark as thorax. Gaster first tergite and rest light brown, sternites yellow. Forewings hyaline, but under marginal vein with slight infuscation. Legs yellow, only mid and hind coxae dark.

Mesoscutum with short silver setae and a pair of long setae at the apex, scutellum with 2 pairs of long setae.

Head as in *elvestueni*. Antenna is given in Figure 3.

Relative measurements on slides: HW 29, FV 10, POL 5, AOL 3, DPO 1.5, DAO 1.5, OOL 1.5, OCL 1.5, EL 17, MSL 11.

Paratype ♀ (length including ovipositor 1.16 mm, without ovipositor 1.1 mm). Forewing venation as in Figure 4; ovipositor 1.4× as long as midtibia; gonostyli 0.28× as long as ovipositor.

Male: Unknown.

Material examined: Holotype: NORWAY, TELEMARK costal [TEY], Drangedal: Skultrevassåsen [N59.0783°, E09.2608° ±1000 m], 1♀ 28 May–18 July 2006, Malaise trap, leg. Sverre Kobro; Paratype: NORWAY, ØSTFOLD [Ø], Eidsberg: Mysen, Åsen [N59.51829°, E11.33985° ±50 m], 1♀ 5 May 2012, leg. Ove Sørlibråten.

Holotype deposited at the Natural History Museum, Oslo University, Oslo, Norway; designated to the NHM, Oslo, Norway. Paratype deposited at the collection of Agricultural University of Georgia, Tbilisi, Georgia.

Biology: Unknown.

Distribution: Norway.

Etymology: After the name of the Norse god Odin.

Comments: The new species is most closely related to *A. kurdjumovi*, but differs by the following morphological characters: forewings in front of linea calva have 2–3 complete and 2–3 incomplete lines of setae (*kurdjumovi*: delta region proximal to linea calva has 3–5 incomplete lines of setae); scape 6× as long as broad (*kurdjumovi*: 5×); clava at most 2.7× as long as broad (*kurdjumovi*: 3×); F_3 transverse or at most subquadrate (*kurdjumovi*: slightly longer than); ovipositor 3.6× as long as gonostyli length (*kurdjumovi*: almost 4×).

***Aphelinus paluscolus* sp. nov.**

Description: Holotype ♀. Length of body 1.29 mm, excluding ovipositor 1.2 mm.

Head completely dark brown; antenna yellow. Thorax dark brown with metallic reflection. Tegula dark but not as dark as thorax. Gaster basal 1/3 yellow or light brown and rest brown. Forewings hyaline. Legs yellow, only hind coxae slightly infuscated.

Mesoscutum with short silver setae and a pair of long setae at the apex, scutellum with 2 pairs of long setae. Forewings with delta region proximal to linea calva with 1–2 complete and 1–2 incomplete lines of setae.

Head slightly shiny. Ocelli forming an angle of about 100°. Antenna with apex of clava more or less pointed (Figure 5). Eye reaching occipital margin; upper temple rounded in facial view. Eye margins on the face curved. Scrobes moderately deep, U-shaped. Antennal torulus separated from mouth margin by about its own length.

Relative measurements on slides: HW 33, FV 11, POL 6, AOL 4, DPO 2, DAO 2, OOL 1.5, OCL 1, EL 15, MSL 10.

Paratypes ♀ (length including ovipositor 1.24–1.36 mm, without ovipositor 1.14–1.29 mm). Forewing venation as in Figure 6.

Material examined: Holotype: NORWAY, AKERSHUS [AK], Oslo: Østensjøvannet, Northern shore [N59.89732°, E10.83020° ±10 m; 99 m a.s.l.], 1♀ 1–30 Sept. 1996, Malaise trap, leg. Morten Falck & Lars Ove Hansen. Paratypes: 2♀♀ [locality as holotype]; 1♀ NORWAY, AKERSHUS [AK], SØRUM: Sørliløkka, Dammyra [N60.00523°, E11.17698° ±50 m; 193 m a.s.l.], 28 August 2011, leg. Ove Sørlibråten.

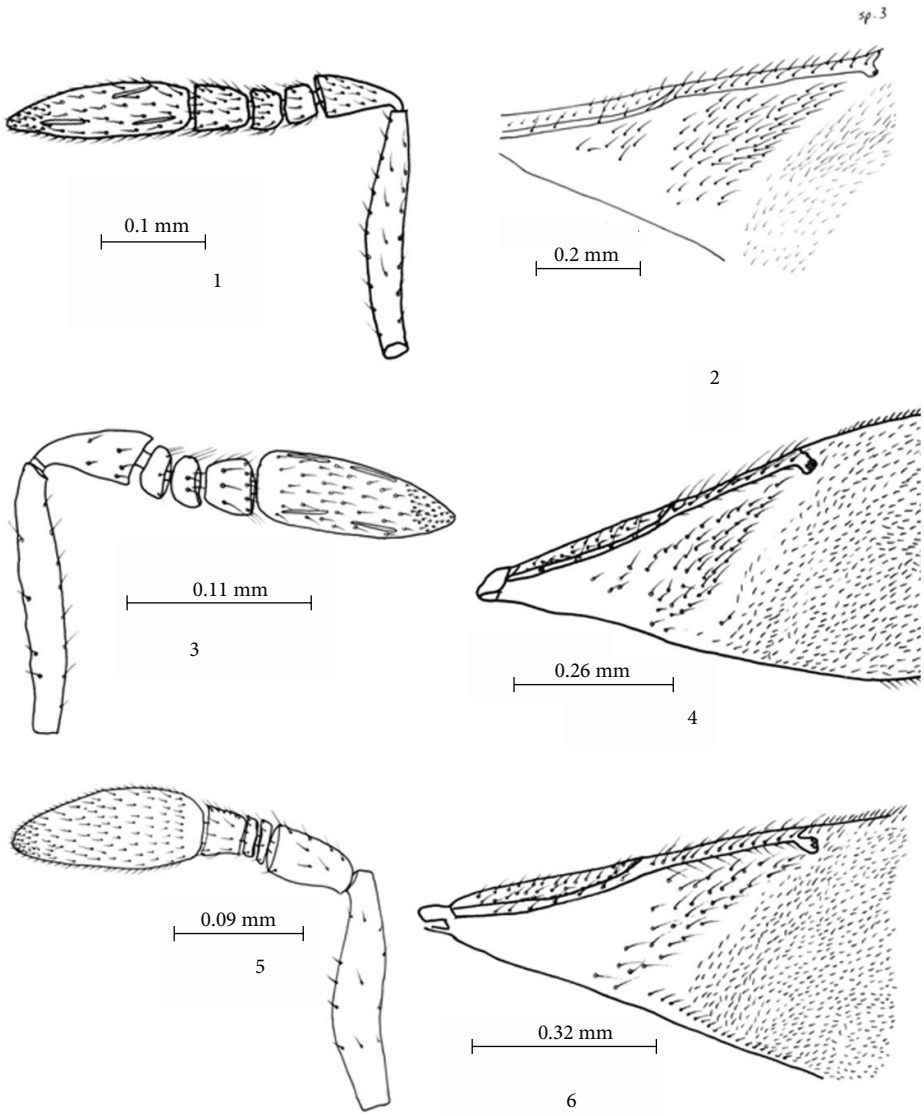
Holotype and paratypes deposited at the Natural History Museum, University of Oslo, Norway; designated to the NHM, Oslo, Norway. One paratype deposited at the collection of Agricultural University of Georgia, Tbilisi, Georgia.

Biology: Unknown, but both localities are boggy or swampy sites with reeds (*Pragmites australis*), particularly the Østensjøvannet locality where the Malaise trap was situated in a huge population of reeds. It is thus thought that the host species is associated with reeds.

Distribution: Norway.

Etymology: From New Latin *palus,* meaning marsh, swamp, bog, and *colus* from Latin meaning inhabiting, dwelling.

Comments: The new species is similar to *A. certus*, but differs by the following morphological characters: legs yellow, only hind coxa slightly infuscated (*certus*: only femura and fore tibia yellow); clava 2.2× as long as broad



Figures 1–6. Figures 1 and 2, *Aphelinus elvestueni* sp. nov.: 1, ♀ antenna; 2, ♀ forewing venation. Figures 3 and 4, *Aphelinus odin* sp. nov.: 3, ♀ antenna; 4, ♀ forewing venation. Figures 5 and 6, *Aphelinus paluscolus* sp. nov.: 5, ♀ antenna; 6, ♀ forewing venation.

(*certus*: 2.5×); F_3 transverse (*certus*: longer than broad); F_1–F_3 together not longer than pedicel (*certus*: F_1–F_3 together longer than pedicel); costal cell almost as long as marginal vein (*certus*: costal cell clearly much longer than marginal vein).

***Aphelinus varipes* (Förster, 1841)**

Material examined [**Norway**]: AKERSHUS [AK], Bærum: Storøykilen NR [N59.8944°, E10.6019° ±50 m], 1♂ ex *Lipara*-gall (Diptera: Chloropidae) picked October 2002 on *Phragmites australis*, emerged April 2003; leg. Lars Ove Hansen; BUSKERUD eastern [BØ] Lier: Gullaug [N59.7500°, E10.2875° ±25 m], 1♂ ex *Lipara*-gall (Diptera: Chloropidae) 2nd year picked 26 December 2003 on *Phragmites australis*; emerged April 2004; ref. 04/08, leg. Lars Ove Hansen.

Distribution: Australia, Chile, Croatia, Czech Republic, Egypt, Europe, France, Georgia, Germany, Hungary, Israel, Italy, Japan, Kazakhstan, Madeira, Mexico, Morocco, Nearctic, Nepal, Netherlands, Pakistan, Paraguay, Portugal, Russia, Serbia, Slovakia, South Africa, Spain, Sweden, Turkey, Ukraine, United Kingdom, and United States of America. **Norway**: SOGN OG FJORDANE coastal [SFY] Luster: Jostedalen, Gaupne, 2♀♀ 16 July 1979, leg. Steve Compton (Compton, 1981).

Key to Norwegian species of *Aphelinus*
(Females ♀♀)

1 Brachypterous: tip of forewing, when the latter is laid back, not reaching apex of gaster……..*asychis* Walker
- Macropterous: tip of forewing, when the latter is laid back, reaching beyond apex of ster…….....2
2(1) Costal cell of forewing with only 1 complete row of hairs on ventral surface or itht…….……...……3
- Costal cell of forewing with 2 or 3 complete rows of hairs…….....……5
3(2) Hind ocelli larger, separated by less than their own major diameter from the orbits of eyes, antenna with third funicular segment almost quadrate, F_2 slightly longer than ……..*abdominalis* Dalman
- Hind ocelli very small, separated by more than their own major diameter from the orbits of eyes, antenna with third funicular segment slightly longer than broad, F_2 almost as long as F_1.…….....……4
4(3) Scape and pedicel dark, almost brown …….....…….. *asychis* Walker
- Scape and pedicel yellow, at most with very slight almost unnoticeable infuscation …….……*odin* **sp. nov.**
5(2) Forewing, just basal of the speculum, with only 1 complete line of hairs, second line extends at most half way down……..*mali* (Haldeman)
- Forewing, just basal of the speculum, with more numerous hairs in 2 or more lines, second line extends at least 3/4 of the way down …….....…6
6(5) At least the mid femora slightly infuscate medially …….....……..……7
- All the femora entirely yellow …….……..…8
7(6) Forewings delta region proximal to linea calva with 1 complete and 2–3 incomplete lines of ……..……....*chaonia* Walker
- Forewings delta region proximal to linea calva with 5–6 complete lines of hais.....*elvestueni* **sp. nov.**
8(7) Hind tibia at least slightly infuscated ……....……..*varipes* Förster
- Hind tibia low.…….…….*paluscolus* **sp. nov.**

4. Discussion

The 3 species *Aphelinus abdominalis* (Dalman, 1820), *A. chaonia* Walker, 1839, and *A. varipes* (Förster, 1841) have previously been recorded from Norway, while *A. mali* (Haldemann, 1851) and *A. asychis* Walker, 1839 represent new records for the country. The 3 species *A. elvestueni* sp. nov., *A. odin* sp. nov., and *A. paluscolus* sp. nov. are described, illustrated, and compared with closely related species. Thus, as a result, the number of Aphelinus species in Norway has increased to 8.

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